AMENDMENT TO THE CLAIMS

The following claim listing replaces all prior listings and versions of the claims:

LISTING OF CLAIMS

1.   (Cancelled)

2.   (Previously presented) The Luneberg lens according to claim 6, wherein the inorganic filler having a high dielectric constant comprises a titanate.

3.   (Original) The Luneberg lens according to claim 2, wherein the titanate is barium titanate, strontium titanate, calcium titanate, or magnesium titanate.

4.   (Cancelled)

5.   (Withdrawn/Previously presented) A method of producing a Luneberg lens that satisfies the requirements described in claim 6, comprising the steps of:

mixing a polyolefin resin and/or a derivative thereof with an inorganic filler having a high dielectric constant, the volume ratio of the polyolefin resin and/or the derivative thereof to the filler being 99 to 50:1 to 50;

adding a foaming agent to the resulting resin mixture and then performing pre-expansion;

classifying and selecting the resulting pre-expanded beads by gravity separation or size classification; and

forming the classified and selected pre-expanded beads into a shape.

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6.　　(Currently Amended) A Luneberg lens having a multilayer structure containing a plurality of layers having different dielectric constants,

wherein the respective structure is produced by mixing a polyolefin resin and/or a derivative thereof with an inorganic filler having a high dielectric constant, the volume ratio of the polyolefin resin and/or the derivative thereof to the filler being 99 to 50:1 to 50, the resulting resin mixture being substantially uniformly cut to make the size of each pellet being 1/4 or less of the wavelength of the electromagnetic wave used, adding a foaming agent to the resulting resin mixture and then performing preliminary expansion, and molding the resulting pre-expanded beads on condition that the concentration of the inorganic filler is within a range of ±0.5% with reference to the designed concentration;

at least a foamed dielectric layer having a dielectric constant of 1.5 or more is formed using the pre-expanded beads that have been classified by gravity separation or size classification such that f(A) satisfies the expression $0.0005 \leq f(A) \leq 0.1$, where f(A) is represented by the equation: $f(A) = \sigma a/Aave$, σa is the deviation of a gas volume fraction Ar in the foamed dielectric layer, and Aave is the average of the gas volume fractions Ars at positions in the foamed dielectric layer; and

exceeding values of sidelobe of the Luneberg lens are within 10% relative to at least one of the specified values 32-25 logφ in the first design according to EIAJ CPR-5104A and the specified values 29-25 logφ according to ITU-R recommendation.

7.　　(New) The Luneberg lens according to claim 6, wherein maximum gain of the Luneberg lens is at least 31.5dB and a variation of gain is within ±0.2 dB.